RIVERS POINT PROPERTY OWNERS ASSOCIATION (PWS 4080037) – PART 2 (GROUND WATER) SOURCE WATER ASSESSMENT FINAL REPORT

January 6, 2003

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and spring, and aquifer characteristics.

This report, *Source Water Assessment for Rivers Point Property Owners Association, Crouch, Idaho,* describes the public water system (PWS), the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The Rivers Point Property Owners Association (PWS #4080037) drinking water system consists of two wells, one spring, and a surface water source. The wells and spring are located approximately one-half mile east of the South and Middle Fork Payette River confluence. The system currently serves approximately 140 people through 40 connections. This report will focus on the ground water sources of the system. For information regarding the surface water source, the Source Water Assessment Report titled, "Rivers Point Property Owners Association PWS# 4080037" can be obtained by contacting the Boise Regional Office of the Idaho Department of Environmental Quality (DEQ).

Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores (wells only), and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in another category results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well or spring can get is moderate. Potential contaminants are divided into four categories, inorganic chemical (IOC, i.e. nitrates, arsenic) contaminants, volatile organic chemical (VOC, i.e. petroleum products) contaminants, synthetic organic chemical (SOC, i.e. pesticides) contaminants, and microbial contaminants (i.e. bacteria). As different wells or springs can be subject to various contamination settings, separate scores are given for each type of contaminant.

In terms of total susceptibility, Well #2 and Well #3 rated automatically high for IOCs and microbial bacteria. Well #2 rated moderate for VOCs and SOCs, and Well #3 rated high for VOCs and SOCs. System construction rated moderate in Well #2 and high in Well #3. Hydrologic sensitivity rated high in both wells. Potential contaminant/land use scores were moderate for IOCs, VOCs, SOCs, and low for microbials. The automatically high ratings for IOCs are due to the detection of fluoride in concentrations greater than the maximum contaminant levels (MCLs), and the automatically high microbial bacteria rating is due to the existence of livestock within the 50-foot sanitary setback (Sanitary Survey, 1993).

In terms of total susceptibility, the spring intake rated moderate for IOCs, VOCs, SOCs, and automatically high for microbial contaminants. System construction for the spring rated high, and land use scores were moderate for IOCs, VOCs, SOCs, and low for microbial contaminants. The automatically high ratings are due to the Ground Water Under Direct Influence (GWUDI) field survey noting that the spring was influenced by surface water.

No VOCs or SOCs have ever been detected in the system's water. The IOCs fluoride, nitrate, radium, and arsenic have been detected in the water system. Each of the detected IOCs have been in concentrations significantly below current MCLs, except for arsenic and fluoride. Arsenic has been detected in concentrations as high as 25 parts per billion (ppb) on three occasions (April 1997, June 1998, April 1999). In October 2001, the EPA lowered the arsenic MCL from 50 ppb to 10 ppb, however water systems have until 2006 to meet the new standard. Fluoride concentrations have been detected as high as 5.93 parts per million (ppm) in December 1998, which is higher than the MCL of 4 ppm. The spring and well delineations also intersect a priority area for the IOC arsenic.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well or spring sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the Rivers Point Property Owners Association system, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Actions should be taken to keep a 50-foot radius circle around the wellheads and a 100-foot radius circle around the spring clear of potential contaminants. Any contaminant spills within the delineation should be carefully monitored and dealt with. As much of the designated assessment areas are outside the direct jurisdiction of Rivers Point Property Owners Association, collaboration and partnerships with state and local agencies and industry groups should be established and are critical to success. Because the level of arsenic in the tested water is greater than the level of the revised MCL, the system may need to consider implementing engineering controls to monitor and maintain or reduce the level of this contamination in the water system. The EPA plans to provide up to $20 million over the next two years for research and development of more cost-effective technologies to help small systems meet the new MCL. More information regarding arsenic and fluoride can be researched at www.waterqualityreports.org.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation is near residential land uses areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As much of the land within the delineation is National Forest, the U.S. Forest Service Emmett Ranger District may want to be contacted regarding protection activities.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Boise Regional Office of the DEQ or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR
RIVERS POINT PROPERTY OWNERS ASSOCIATION,
CROUCH, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this assessment means.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are included. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is included.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and spring and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The Rivers Point Property Owners Association (PWS #4080037) drinking water system consists of two wells, one spring, and a surface water source. The wells and spring are located approximately one-half mile east of the South and Middle Fork Payette River confluence. The system currently serves approximately 140 people through 40 connections. This report will focus on the ground water sources of the system. For information regarding the surface water source, the Source Water Assessment Report titled, "Rivers Point Property Owners Association PWS# 4080037" can be obtained by contacting the Boise Regional Office of the DEQ.

No VOCs or SOCs have ever been detected in the system's water. The IOCs fluoride, nitrate, radium, and arsenic have been detected in the water system. Each of the detected IOCs have been in concentrations significantly below current MCLs, except for arsenic and fluoride. Arsenic has been detected in concentrations as high as 25 ppb on three occasions (April 1997, June 1998, April 1999). In October 2001, the EPA lowered the arsenic MCL from 50 ppb to 10 ppb, however water systems have until 2006 to meet the new standard. Fluoride concentrations have been detected as high as 5.93 ppm in December 1998, which is higher than the MCL of 4 ppm. The spring and well delineations also intersects a priority area for the IOC arsenic.

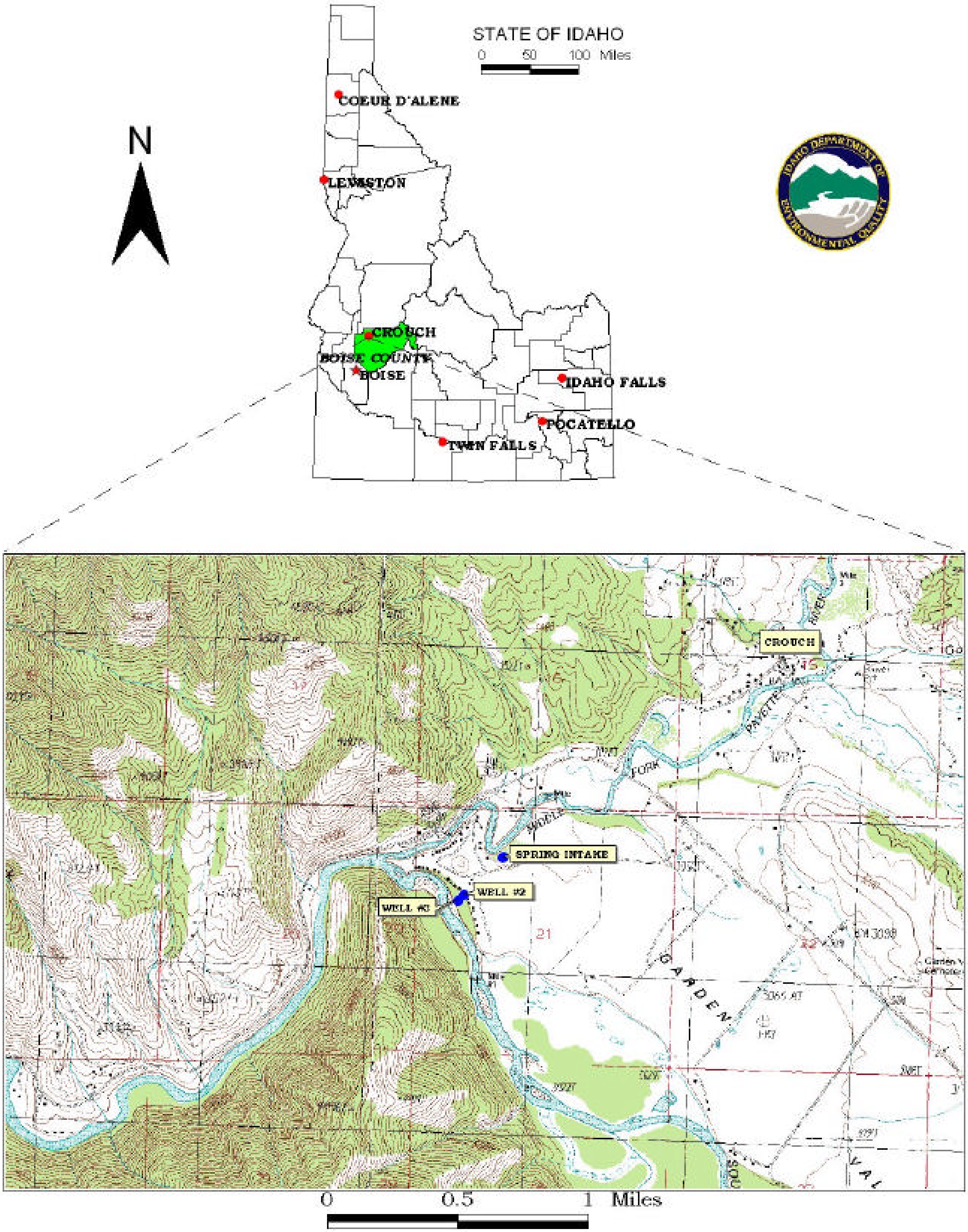
Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well or spring that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well or spring) for water in the aquifer. DEQ developed the delineation using a refined analytical element computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT. The computer model used site specific data, assimilated by DEQ from a variety of sources including Rivers Point Property Owners Association well logs, other local area well logs, and hydrogeologic reports (detailed below).

General Geology for the Garden Valley aquifer system

The Garden Valley province lies in the western portion of the Idaho Batholith, a large granitic mass that underlies much of central Idaho. Northeast-trending faults occur in the granite throughout the area. The western side of the valley is cut by a large north-south trending fault that appears to be an extension of the Boise Ridge Fault (Scanlon, 1996). Garden Valley is considered a structural basin produced by Tertiary faulting (Weis, 1994). Geologic materials underlying surficial soils consist of alluvial sandy gravel with cobbles deposited by the Middle Fork of the Payette River (Fisher et al., 1992). The Payette Formation, composed of poorly consolidated siltstone and sandstone occurs along the west side of the river.

FIGURE 1. Geographic Location of Rivers Point Property Owners Association



Based on existing information, including well logs, topography, and technical reports, the regional static ground water level occurs at a depth of 0 (surficial springs) to about 60 feet below ground surface (bgs) in the alluvium and up to 220 feet bgs for wells drilled in the granite. Well log specific capacity tests produce aquifer transmissivities from 4 to 265 ft^2/day. A nutrient pathogen study was conducted for the Cross Timber Ranch Subdivision (Terracon, 1999) in the vicinity of Alder Creek on the south side of Garden Valley. A slug test on one of the monitoring wells predicted a saturated hydraulic conductivity value of 9 feet per day for the alluvial aquifer, in line with the specific capacity tests performed. An additional nutrient-pathogen study for the River Park Meadows Subdivision (Braun, 2000) located at the northern boundary of the model showed similar conditions in the area.

Garden Valley WhAEM2000 delineations

The system well logs as well as the surrounding well logs show that the water table is controlled at the surface by the South Fork and the Middle Fork of the Payette River. Wells drilled exclusively into the granite that is separate from the alluvium have a lower water table. The two forks of the Payette River merge on the southwestern side of the valley and exit from the Garden Valley province. Though a few of the PWS wells (Rivers Point, Garden Valley Ranchettes, Garden Valley High School) are influenced by the South Fork of the Payette, the majority of the PWS wells are located on the western side of the Middle Fork of the Payette River. Fisher et al. (1992) shows numerous faults in the area that could control recharge. Therefore, no-flow boundary conditions were assigned to the northward trending faults along the western side of Garden Valley as well as the northeast trending faults on the southeast and northern sides of Garden Valley. The eastern extent of the model was placed at the surface extent of the granitic layer. Both forks of the Payette River were added to help constrain the water table gradient. Test points were added throughout the area of the wells to help assess the appropriate input of water to the system.

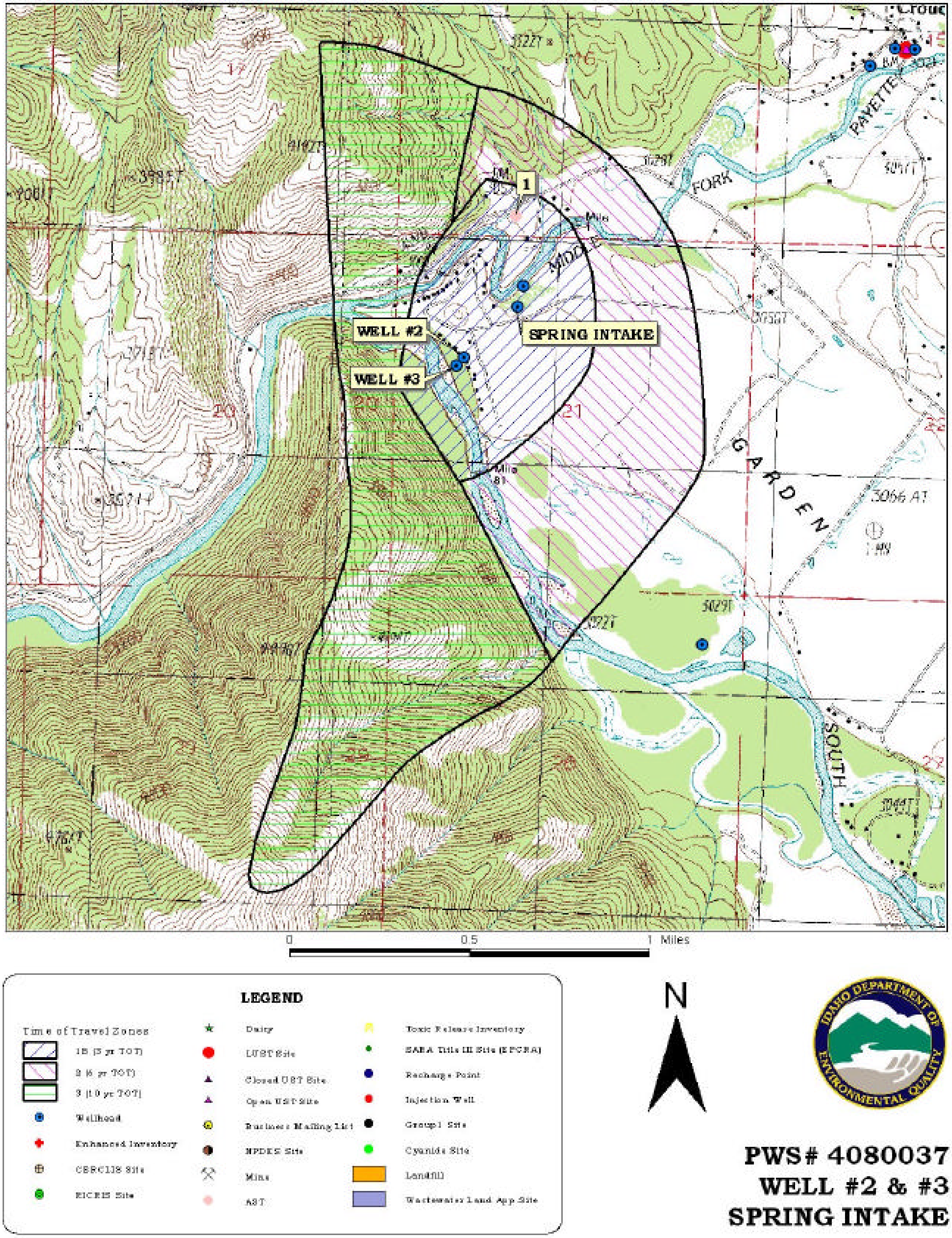
Despite the large quantities of water in the valley, recharge was kept quite low (0 to 0.40 inches per year) since the major rock type is granite.

The delineated area for the Rivers Point Property Owners Association wells and spring can best be described as the approximate area within a 0.75-mile radius of the sources and a small drainage south of the Middle Fork Payette River (Figure 2). The 3- and 6-year TOT zones were modeled and reached the straight-line faults to the northwest and southwest of the sources. The 10-year TOT zone was an approximation of the area contributing to these faults on a watershed basis)

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases. Land use within the area surrounding the Rivers Point Property Owners Association sources is predominately forested lands.

FIGURE 2. Rivers Point Property Owners Association Delineation Map and Potential Contaminant Source Locations



PWS# 4080037
WELL #2 & #3
SPRING INTAKE

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well or spring.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in September and October 2002. The first phase involved identifying and documenting potential contaminant sources within the Rivers Point Property Owners Association source water assessment area (Figure 2) through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the delineated areas.

The delineated source water area for the wells and spring (Figure 2, Table 1) have their potential contaminants outlined below. Sources include an above ground storage tank, Middle Fork Payette River, and the Banks/Lowman Highway.

Table 1. Rivers Point Property Owners Association, Well #2, Well #3, and the spring intake Potential Contaminant Inventory and Land Use

SITE #	Source Description	TOT Zone[1] (years)	Source of Information	Potential Contaminants[2]
1	Above ground storage tank	0-3 YR	Database Search	VOC, SOC
	Middle Fork Payette River	0-10 YR	GIS Map	IOC, VOC, SOC, microbial
	Banks/Lowman Highway	0-10 YR	GIS Map	IOC, VOC, SOC, microbial

[1] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[2] IOC = inorganic chemical, SOC = synthetic organic chemical, VOC = volatile organic chemical

Section 3. Susceptibility Analyses

The susceptibility to contamination for both the wells and spring were ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics (wells only), physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well or spring is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment A contains the susceptibility analysis worksheets. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity (wells only)

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone (aquitard) above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Well #2 rated high for hydrologic sensitivity. Area soils are moderately to well drained according to the National Resources Conservation Service (NRCS). The vadose zone is composed of predominantly permeable material gravel, the depth of the water table is less than 300 feet bgs, and an aquitard is not present above the producing zone of the well.

Well #3 also rated high for hydrologic sensitivity. Area soils are moderately to well drained according to the NRCS. A well log was unavailable for this well, so composition of the vadose zone, water table depth, and whether an aquitard exists above the producing zone of the well is unknown. If a well log had been available, the score might have been lower.

System Construction

Spring Construction

Spring construction scores are determined by evaluating whether the spring has been constructed according to Idaho Code (IDAPA 58.01.08.04) and if the spring's water is exposed to any potential contaminants from the time it exits the bedrock to when it enters the distribution system. If the spring intake structure, infiltration gallery, and housing are located and constructed in such a manner as to be permanent and to protect it from all potential contaminants, is contained within a fenced area of at least 100 feet in radius, and is protected from all surface water by diversions, berms, etc., then Idaho Code is being met and the score will be lower. If the spring water comes in contact with the open atmosphere before it enters the distribution system, it receives a higher score. Likewise, if the spring water is piped directly from the bedrock to the distribution system or is collected in a protected spring box without any contact to potential surface-related contaminants, the score is lower.

The spring intake rated high for system construction. At the time of this analysis, no information was available as to the construction of the spring, so the most conservative, higher scores were given.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

Well #2 rated moderate for system construction. According to the well log, the well was constructed in 1975. An 8-inch hole was drilled to 210 feet bgs and steel casing 8-inches in diameter and 0.250 inches thick was placed to 33 feet bgs into granite. A cement grout annular seal was placed 30 feet bgs into clay. An open hole extends from the bottom of the casing to the bottom of the hole. The well produces from less than 100 feet below the static water level. The well is located outside of the 100-year floodplain, and both the casing and annular seal extend into low permeability units. The 1993 sanitary survey noted that the wellhead and surface seal are maintained except that a proper drain needs to be installed.

Well #3 rated high for system construction. The well is located outside of the 100-year floodplain. However, no well log was available for this well, so scores derived from it were given the most conservative, highest rating. Specifically, without the well log, it is unknown if the highest production is more than 100 feet below static water levels, if the casing and annular seal extend into low permeability units, or if the well's construction meets current standards. The 1993 sanitary survey noted the only deficiencies in the wellhead and surface seal was that it was not safe from flooding.

Current PWS well construction standards are more stringent than when the wells were constructed. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the regulations deal with screening requirements, aquifer pump tests, use of a downturned casing vent, and thickness of casing. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Six-inch diameter casings require a casing thickness of 0.322-inches. The wells were assessed an additional system construction point because they did not meet, or it was unknown if they met current regulations.

Potential Contaminant Source and Land Use

Both of the wells and the spring rated moderate for IOCs, VOCs, SOCs, and low for microbials. The low number of potential contaminant sources within the delineation contributed to the scores, as did the minimal amount of agricultural land.

Final Susceptibility Ranking

A detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead or spring will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, potential contaminant sources within 50-feet of a wellhead or 100 feet of a spring will automatically lead to a high susceptibility rating. In this case, Well #2 and Well #3 rated automatically high for IOCs due to concentrations of fluoride being detected higher than the MCL, and for microbials due to the 1993 sanitary survey noting the presence of livestock within 50 feet of the wells. In addition, the spring intake rated automatically high for microbials due to GWUDI field survey notations that the spring is influenced by surface water. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) contribute greatly to the overall ranking.

Table 2. Summary of Rivers Point Property Owners Association Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #2	H	M	M	M	L	M	H*	M	M	H*
Well #3	H	M	M	M	L	H	H*	H	H	H*
Spring Intake	NA	M	M	M	L	H	M	M	M	H*

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
H*= Well #2 and Well #3 rated automatically high for IOCs due to concentrations of fluoride being detected higher than the MCL, and for microbials due to the 1993 sanitary survey noting the presence of livestock within 50 feet of the wells. The spring intake rated automatically high for microbials due to Ground Water Under Direct Influence (GWUDI) field survey notations that the spring is influenced by surface water.

Susceptibility Summary

The Rivers Point Property Owners Association (PWS #4080037) drinking water system consists of two wells, one spring, and a surface water source. The wells and spring are located approximately one-half mile east of the North and Middle Fork Payette River confluence. The system currently serves approximately 140 people through 40 connections. This report focused on the ground water sources of the system.

In terms of total susceptibility, Well #2 and Well #3 rated automatically high for IOCs and microbial bacteria. Well #2 rated moderate for VOCs and SOCs, and Well #3 rated high for VOCs and SOCs. System construction rated moderate in Well #2 and high in Well #3. Hydrologic sensitivity rated high in both wells. Potential contaminant/land use scores were moderate for IOCs, VOCs, SOCs, and low for microbials. The automatically high ratings for IOCs are due to the detection of fluoride in concentrations greater than the MCL, and the automatically high microbial bacteria rating is due to the existence of livestock within the 50 foot sanitary setback (Sanitary Survey, 1993).

In terms of total susceptibility, the spring intake rated moderate for IOCs, VOCs, SOCs, and automatically high for microbial contaminants. System construction for the spring rated high, and land use scores were moderate for IOCs, VOCs, SOCs, and low for microbial contaminants. The automatically high ratings are due to the GWUDI field survey noting that the spring was influenced by surface water.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the Rivers Point Property Owners Association system, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey. Actions should be taken to keep a 50-foot radius circle around the wellheads and a 100-foot radius circle around the spring clear of potential contaminants. Any contaminant spills within the delineation should be carefully monitored and dealt with. As much of the designated assessment areas are outside the direct jurisdiction of Rivers Point Property Owners Association, collaboration and partnerships with state and local agencies and industry groups should be established and are critical to success. The wells should maintain sanitary standards regarding wellhead protection. Because the levels of arsenic and fluoride in the tested water is greater than the levels of the current MCLs, the system may need to consider implementing engineering controls to monitor and maintain or reduce the level of this contamination in the water system. The EPA plans to provide up to $20 million over the next two years for research and development of more cost-effective technologies to help small systems meet the new arsenic MCL.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation is near residential land uses areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Boise Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Boise Regional DEQ Office	(208) 373-0550
State DEQ Office	(208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper (mlharper@idahoruralwater.com), Idaho Rural Water Association, at 1-208-343-7001 for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

Braun Consulting, 2000, Level 1 Nutrient-Pathogen Study Proposed Lot Split River Park Meadows Subdivision No.2, Boise County, Idaho.

Fisher, F.S., D.H. McIntyre, and K.M. Johnson, 1992, Geology of the Challis Quadrangle, Idaho: Idaho Geological Survey Map GM-5, 39 pages, 1 plate, scale 1:250,000.

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

Idaho Department of Agriculture, 1998. Unpublished Data.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Environmental Quality, 2002. Source Area Delineation Draft Report Garden Valley Hydrologic Province.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

Idaho Division of Environmental Quality, 1993. Sanitary Survey for Rivers Point Property Owners Association, PWS # 4080037.

Idaho Division of Environmental Quality, 1996. Groundwater Under Direct Influence Field Survey, PWS # 4080037.

Kraemer, S.R., H.M. Haitjema, and V.A. Kelson, 2000, Working with WhAEM2000 Source Water Assessment for a Glacial Outwash Well Field, Vincennes, Indiana, U.S. Environmental Protection Agency, Office of Research, EPA/600/R-00/022, 50 p.

Terracon, 1999, Nutrient-Pathogen Study Crosstimber Ranch Subdivision, Boise County, Idaho, Project No. 62997001.

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Attachment A

Rivers Point Property Owners Association
Susceptibility Analysis
Worksheets

Formula for Spring Source

The final spring scores for the susceptibility analysis were determined using the following formulas:

1. VOC/SOC/IOC/ Final Score = (Potential Contaminant/Land Use x 0.6) + System Construction

2. Microbial Final Score = (Potential Contaminant/Land Use x 1.125) + System Construction

Final Susceptibility Scoring:
0 - 7 Low Susceptibility
8 - 15 Moderate Susceptibility
≥ 16 High Susceptibility

Formula for Well Sources

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:
0 - 5 Low Susceptibility
6 - 12 Moderate Susceptibility
≥ 13 High Susceptibility

Spring Source Susceptibility Report   Public Water System Name: CITY OF PRESTON   BURQUIST SPRING

Public Water System Number 6210014   09/17/2002 3:55:23 PM

1. System Construction

		SCORE
Intake structure properly constructed	NO	1
Is the water first collected from an underground source Yes=spring developed to collect water from beneath the ground; lower score No=water collected after it contacts the atmosphere or unknown; higher score	NO	2
Total System Construction Score		3

3. Potential Contaminant / Land Use - ZONE 1A

		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	2	3	3	2
(Score = # Sources X 2) 8 Points Maximum		4	6	6	4
Sources of Class II or III leacheable contaminants or	YES	2	3	3	
4 Points Maximum		2	3	3	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		10	11	11	6
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		16	17	17	6

	IOC	VOC	SOC	Microbial
4. Final Susceptibility Source Score	13	13	13	10
5. Final Spring Ranking	Moderate	Moderate	Moderate	Low

Ground Water Susceptibility Report   Public Water System Name : RIVERS POINT PROPERTY OWNERS ASSN   Well# : WELL #2
Public Water System Number 4080037   11/21/2002 9:56:06 AM

1. System Construction

		SCORE
Drill Date	10/30/1975	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1993
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	YES	0
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		3

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A

		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0

Potential Contaminant / Land Use - ZONE 1B

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant sources present (Number of Sources)	YES	2	3	3	2
(Score = # Sources X 2) 8 Points Maximum		4	6	6	4
Sources of Class II or III leacheable contaminants or	YES	2	3	3	
4 Points Maximum		2	3	3	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B	25 to 50% Irrigated Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		10	11	11	6

Potential Contaminant / Land Use - ZONE II

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	25 to 50% Irrigated Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0

Potential Contaminant / Land Use - ZONE III

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0

	IOC Score	VOC Score	SOC Score	Microbial Score
Cumulative Potential Contaminant / Land Use Score	16	17	17	6
4. Final Susceptibility Source Score	12	12	12	11
5. Final Well Ranking	High	Moderate	Moderate	High

Ground Water Susceptibility Report   Public Water System Name : RIVERS POINT PROPERTY OWNERS ASSN   Well# : WELL #3
Public Water System Number 4080037   11/21/2002 10:45:25 AM

1. System Construction		SCORE
Drill Date	unknown	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1993
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		5

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0

Potential Contaminant / Land Use - ZONE 1B		IOC	VOC	SOC	Microbial
Contaminant sources present (Number of Sources)	YES	2	3	3	2
(Score = # Sources X 2) 8 Points Maximum		4	6	6	4
Sources of Class II or III leacheable contaminants or	YES	2	3	3	
4 Points Maximum		2	3	3	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B	25 to 50% Irrigated Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		10	11	11	6

Potential Contaminant / Land Use - ZONE II		IOC	VOC	SOC	Microbial
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	25 to 50% Irrigated Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0

Potential Contaminant / Land Use - ZONE III		IOC	VOC	SOC	Microbial
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0

	IOC	VOC	SOC	Microbial
Cumulative Potential Contaminant / Land Use Score	16	17	17	6
4. Final Susceptibility Source Score	14	14	14	13
5. Final Well Ranking	High	High	High	High